

## **bq20z70-V150 to bq20z70-V160 Change List**

Chase Richards

HVAL - Battery Management Solutions

### **ABSTRACT**

This document describes the design considerations required to change a bq20z70-V150 design to a bq20z70-V160 solution. Find the latest ordering information and data sheet on the World Wide Web at: <http://power.ti.com>

### **Introduction**

The bq20z70-V160 firmware upgrade has been released to address an issue found in the bq20z70-V150 version.

New orderable part numbers have been released to support the following firmware upgraded devices.

- bq20z70DBT-V160
- bq20z70DBTR-V160

The latest version of the evaluation software is required to be able to read and write all the data flash configuration locations.

To upgrade a previous version of the bq20z70, use the evaluation software available on [power.ti.com](http://power.ti.com) and find the latest encrypted program in the web folders. For details on how to update the firmware, refer to *Updating Firmware With the bq20zxx and EVM (SLUA336)* application note.

### **bq20z70-V150 to bq20z70-V160 CHANGE DETAILS**

<b>CHANGE</b>	<b>bq20z70-V160</b>	<b>bq20z70-V150</b>	<b>COMMENTS</b>
Corrected 2 thermistor operation for over temperature condition.	When configured to use 2 thermistors, TS2 will now be able to trigger over temp conditions when its temperature is above the user-defined thresholds.	When configured to use 2 thermistors, the 2 <sup>nd</sup> thermistor, TS2, will not trigger an over-temp condition when its temperature is above the user-defined thresholds. Only TS1 will trigger an over-temp condition.	In 2 thermistor applications, improves safety.

### **SUMMARY**

No dataflash configurations are associated with the specific changes for bq20z75-V160.

**bq20z70-V110 to bq20z70-V150 CHANGE HISTORY**

<b>CHANGE</b>	<b>bq20z70-V150</b>	<b>bq20z70-V110</b>	<b>COMMENTS</b>
Added new feature for cell-based shutdown.	Shutdown can be configured to be either pack-based or cell-based depending on the setting of <i>DF:Operation Cfg C</i> [SHUTV].	Shutdown was based on the pack voltage only.	Allow better customization
Certain values of <i>SBS:RemainingCapacity</i> caused RSOC to report 100% before charge termination was reached.	Prevents RSOC from reporting 100% until after a charge termination is reached. Fixes all cases in which the reporting was incorrect.	Does not contain fix.	Improves capacity display accuracy. Does not affect gauging accuracy.
Increased the size of Manufacturer Info and allowed read access in Sealed mode.	Manufacturer Info is 31 bytes and is R/W in Full Access and Unsealed modes and Read Only in Sealed mode.	Manufacturer Info is 8 bytes and R/W in Full Access and Unsealed modes.	Allow better customization
Added new qualifier for cell imbalance feature.	Cell imbalance can only occur when the minimum cell voltage is greater than <i>DF:Min CIM-check voltage</i> .	Voltage qualifier does not exist.	Improves robustness of cell imbalance detection
After charging a battery and stopping in the flat region of the battery voltage curve, an accuracy error can be introduced if sufficient rest time isn't allowed before the next charge or discharge period begins. A qualifier determines whether this situation has occurred and disables OCV updates.	Qualifier disables OCV updates from occurring in the battery voltage flat region after a charge cycle.	OCV updates allowed in the battery voltage flat region.	Improved gauging accuracy in voltage flat region
Added two new Lifetime logging features: Lifetime Minimum Temperature and Lifetime Maximum Temperature.	Added new Lifetime Data subclass to data flash that includes <i>DF:Lifetime Min Temp</i> and <i>DF:Lifetime Max Temp</i> .	Feature not available.	Improves system debugging capability
Introduced issue when gauge is configured to use 2 thermistors	When configured to use 2 thermistors, the 2 <sup>nd</sup> thermistor, TS2, will not trigger an over-temp condition when its temperature is above the user-defined thresholds. Only TS1 will trigger an over-temp condition.	When configured to use 2 thermistors, TS2 triggered an over temp condition when its temperature was above one of the user-defined thresholds.	Unintended change, issue has been addressed in bq20z70-V160

**SUMMARY**

Recommended configuration file changes for existing applications include:

- Configuring the new *DF:Operation Cfg C* [SHUTV] and *DF:* feature
- Configuring the new *DF:Cell Shutdown Voltage* and *DF:Cell Shutdown Time* feature
- Configuring the new *DF:Min CIM-check voltage* feature

## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
RF/IF and ZigBee® Solutions	<a href="http://www.ti.com/lprf">www.ti.com/lprf</a>

### Applications

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Automotive	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Broadband	<a href="http://www.ti.com/broadband">www.ti.com/broadband</a>
Digital Control	<a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a>
Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Military	<a href="http://www.ti.com/military">www.ti.com/military</a>
Optical Networking	<a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Telephony	<a href="http://www.ti.com/telephony">www.ti.com/telephony</a>
Video & Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
Wireless	<a href="http://www.ti.com/wireless">www.ti.com/wireless</a>

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2008, Texas Instruments Incorporated